National Institute of Environmental Health Sciences

Health cobenefits and transportation-related reductions in greenhouse gas emissions in the San Francisco Bay area

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Abstract:

OBJECTIVES: We quantified health benefits of transportation strategies to reduce greenhouse gas emissions (GHGE). METHODS: Statistics on travel patterns and injuries, physical activity, fine particulate matter, and GHGE in the San Francisco Bay Area, California, were input to a model that calculated the health impacts of walking and bicycling short distances usually traveled by car or driving low-emission automobiles. We measured the change in disease burden in disability-adjusted life years (DALYs) based on dose-response relationships and the distributions of physical activity, particulate matter, and traffic injuries. RESULTS: Increasing median daily walking and bicycling from 4 to 22 minutes reduced the burden of cardiovascular disease and diabetes by 14% (32,466 DALYs), increased the traffic injury burden by 39% (5907 DALYS), and decreased GHGE by 14%. Low-carbon driving reduced GHGE by 33.5% and cardiorespiratory disease burden by less than 1%. CONCLUSIONS: Increased physical activity associated with active transport could generate a large net improvement in population health. Measures would be needed to minimize pedestrian and bicyclist injuries. Together, active transport and low-carbon driving could achieve GHGE reductions sufficient for California to meet legislative mandates.

Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3673232

Resource Description

Climate Scenario :

specification of climate scenario (set of assumptions about future states related to climate)

Other Climate Scenario

Other Climate Scenario: "business as usual scenario" compared against "low-carbon driving" and "active transport" (i.e. walking, biking) scenarios

Exposure :

weather or climate related pathway by which climate change affects health

Air Pollution

Air Pollution: Particulate Matter

Geographic Feature:

resource focuses on specific type of geography

Ocean/Coastal

Geographic Location: ☑

resource focuses on specific location

United States

Health Co-Benefit/Co–Harm (Adaption/Mitigation): ☑

specification of beneficial or harmful impacts to health resulting from efforts to reduce or cope with greenhouse gases

A focus of content

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Cardiovascular Effect, Injury, Morbidity/Mortality, Respiratory Effect

Cardiovascular Effect: Other Cardiovascular Effect

Respiratory Effect: Other Respiratory Effect

Respiratory Condition (other) : non-malignant respiratory disease, not specified

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Mitigation

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Exposure Change Prediction, Outcome Change Prediction

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Medium-Term (10-50 years)